

PATENT ABSTRACTS OF JAPAN

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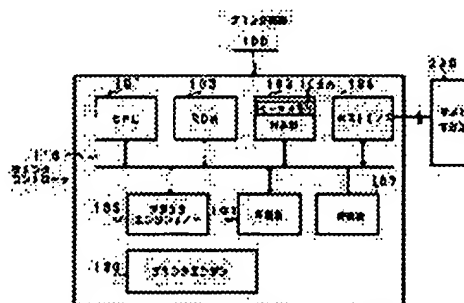
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(54) PRINTER SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a printer system which can print and output images satisfactory for a user even when image data are compressed and can not be stored in a page memory.

SOLUTION: In this printer system constituted so that the image data based on a source image sent from a host machine 200 are compressed and stored in a page memory 103A and the compressed data are extended and sent to a printer engine 120, a printer controller 110 compresses the image data for every prescribed line and successively stores them in the page memory 103A and when the amount of compressed data is too much to be stored in the page memory 103A, the image data dividing the source image into small pieces are requested to the host machine 200 so that the source image can be printed out while being divided into plural parts.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]****[Field of the Invention]** This invention relates to the printer which used the picture compression method.**[0002]****[Description of the Prior Art]** Conventionally, the printer equipment which sends and prints the data which stored in the page memory in a printer controller the image data sent from the host machine, and were subsequently stored to printer engine is used widely. With such printer equipment of a configuration, it divided, and when the page memory space in a printer controller is small, after [with much amount of data] compressing image data in color laser printer equipment using a predetermined compression method, it had become the configuration stored in this page memory, for example.**[0003]** That is, after the printer controller built in color laser printer equipment compressed the image data by which it was divided for every predetermined line sent from the host machine by the predetermined compression method, once stored it in the page memory in a printer controller and elongated this compressed data subsequently to the time of printing, it was constituted and it was so that it might send to printer engine.**[0004]** By the way, in the above configurations, even if it is the case where image data is compressed with a compression method, the class of original image, size, etc., it may not fit in the page memory in a printer controller. In this case, while reporting a printer controller as an error, it is made not to output an image or compresses into image data further, and the method of carrying out automatic processing so that it may fit in *-JIMEMORI is adopted.**[0005]****[Problem(s) to be Solved by the Invention]** By the way, in the above, when it became an error and an image was not outputted like [in the case of the former], after the user corrected the class of original image, size, etc., the method of trying printing again was performed. According to this, correction will be made at every error by the user. And when the result of having corrected in this way had much amount of data and it did not fit in page memory, it became an error again, and therefore, correction needed to be tried repeatedly, actuation became complicated and the user was not excellent in user-friendliness.**[0006]** Furthermore, when the further data compression was automatically performed like [in the case of the latter] so that a printer controller may be settled in page memory, there was a possibility that degradation of an image might occur and there was a possibility that the image of the image quality for which a user wishes as this result might no longer be obtained. Therefore, correction of the class of original image twisted to a user, size, etc. was needed also in this case.**[0007]** Thus, the page memory space in a printer controller was constituted few, and in the printer equipment which therefore stores image data in page memory using a compression method, since the printing image of hope was not once obtained by printing instruction with the class of image data, size, etc., there was a fault of taking a user's time and effort and time amount in such a case by the time it

obtains the image of choice.

[0008] It was made in order to solve the trouble in the above conventional techniques, the compressibility expected when image data is compressed using a predetermined compression method is not obtained, but even if this invention is the case where it is unstorable in the image memory in a printer controller for this reason, it aims at offering the printer equipment which can carry out the printout of the image which a user can satisfy.

[0009]

[Means for Solving the Problem] In order to solve said technical problem, the printer equipment concerning claim 1 of this invention It has page memory, a printer controller, and printer engine. Said printer controller The image data by which it was divided for every predetermined line sent from the host machine which outputs the image data based on a former image is compressed by the predetermined compression method. In the printer equipment of a configuration of elongating and sending out said compressed data to said printer engine which stores said compressed data in said page memory, and performs printing further Said printer controller shall compress said image data for every predetermined line, and sequential storing shall be carried out at said BEPEJI memory. And at the time of storing in said page memory, there is much said compressed amount of data, and when not fitting in said page memory therefore, the image data which divided said former image small is applied, and it is characterized by considering as the configuration which therefore divides and carries out the printout of the former image to two or more parts.

[0010] The printout of the image quality of choice is once made automatically with a printing instruction, without according to the aforementioned configuration, applying the time and effort of excessive actuation to a user by carrying out the rate of the former image small automatically for two or more minutes, and outputting it, even if it is the case where the compressed image data is not settled in the memory in a controller.

[0011] Or the printer equipment concerning claim 2 of this invention is characterized by considering as the configuration which makes 1 page compressed data with which said printer controller filled said page memory with compressed data, and was settled in said page memory, and carries out a printout in a configuration according to claim 1.

[0012] When the compressed image data is not settled in page memory according to the aforementioned configuration, time amount until the output divided into two or more pages is made is shortened by being outputted from the data of a part already settled in page memory.

[0013] Or in a configuration according to claim 2, in case a former image is re-transmitted and the printer equipment concerning claim 3 of this invention outputs it, it is characterized by considering as the configuration which starts a transfer from the head of a part in which it did not fit by the last transfer.

[0014] Since a transfer is started from the head of a part in which it did not fit by the last transfer according to the aforementioned configuration, when the compressed image data is not settled in page memory, useless data transfer is omitted by requiring a re-transfer at the starting point in the image data left without being settled, and, therefore, the transfer time is shortened.

[0015]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained.

Drawing 1 is the block block diagram of 1 operation gestalt of the printer equipment concerning this invention. Drawing 2 is the block block diagram of the printer controller shown in drawing 1.

[0016] As shown in drawing 1, the printer equipment 100 concerning this invention possesses a printer controller 110 and printer engine 120, and is constituted.

[0017] A printer controller 110 possesses CPU101, ROM102, RAM103, host I/F104, printer engine I/F105, a compressor 106, and a stretcher 107, and is constituted.

[0018] CPU101 performs the whole system control, an image processing, etc. A program, various parameters, etc. which CPU101 performs are memorized by ROM102. RAM103 is used as an object for work pieces in temporary storage of a control code, and the case of an image processing, and carries out the temporary storage of the image data to which CPU101 processed and created print data further as

page memory.

[0019] Host I/F104 considers a printing instruction and an exchange of a command as the external host machine 200. Since a command and print data are sent out to printer engine 120, printer engine I/F105 is a part connected with printer engine 120.

[0020] A compressor 106 compresses the image data sent from a host machine 200, and stores it in page memory. On the other hand, a stretcher 107 is a part which elongates the compressed image data by which temporary storage was carried out to *-JIMEMORI, and is sent out to printer engine 120.

[0021] Based on drawing 2, the function of a printer controller 110 is explained below. The image data by which it was divided for every predetermined line sent from the external host machine 200 is received through host I/F104, is compressed with a compressor 106, and is stored in *-JIMEMORI 103A.

[0022] A stretcher 107 develops, and through printer engine I/F105, the compressed data which were stored in page memory 103A are sent to printer engine 120, and are printed.

[0023] In that case, although the image data by which it was divided as mentioned above for every predetermined line sent from a host machine 200 through host I/F104 is compressed by the predetermined compression method and stored in page memory 103A of the printer controller 110 interior in this invention, when the capacity of page memory 103A has been exceeded, the error detection means 108 provided detects overflow, and notifies error generating to a host machine 200 side.

[0024] The flow char of 1 operation gestalt of the printer equipment concerning this invention of operation is shown in drawing 3. Although the image data of a predetermined line is compressed and it stores in page memory as shown in this drawing (step S1) It is confirmed by the error detection means whether, in that case, compressed data is settled in page memory (step S2). Since it is insufficient, when the capacity of page memory was insufficient, and it becomes an error, a re-transfer is required from a host machine so that 1 page may be divided as image data divided into two or more sections and may be outputted (step S5).

[0025] On the other hand, when compressed data is settled in page memory in step S2, it is checked whether it is a data end (step S3), if it is a data end, data will be elongated for every predetermined line and printing will be performed (step S4).

[0026] Moreover, if it is not a data end in step S3, the image data of return and a predetermined line is compressed into step S1, and it stores in page memory.

[0027] The operation flow chart of other operation gestalten of the printer equipment concerning this invention is shown in drawing 4. Although the image data of a predetermined line is compressed and it stores in page memory as shown in this drawing (step S11) It is confirmed by the error detection means whether, in that case, compressed data is settled in page memory (step S12). Since it is insufficient, when the capacity of page memory was insufficient, and it becomes an error Data are first elongated for every predetermined line with the actual condition, printing of some images of a page is performed (step S15), and a re-transfer is required from a host machine so that it may divide as image data which divided one page subsequently to two or more sections and may output (step S16).

[0028] On the other hand, when compressed data is settled in page memory in step S12, it is checked whether it is a data end (step S13), if it is a data end, data will be elongated for every predetermined line and printing will be performed (step S14).

[0029] Moreover, if it is not a data end in step S13, the image data of return and a predetermined line is compressed into step S11, and it stores in page memory.

[0030] The flow char of still more nearly another operation gestalt of the printer equipment concerning this invention of operation is shown in drawing 5. Although the image data of a predetermined line is compressed and it stores in page memory as shown in this drawing (step S21) It is confirmed by the error detection means whether, in that case, compressed data is settled in page memory (step S22). Since it is insufficient, when the capacity of page memory was insufficient, and it becomes an error Data are first elongated for every predetermined line with the actual condition, printing of some images of a page is performed (step S25), and, subsequently a re-transfer of the image data from a location which was not

settled is required from a host machine (step S26).

[0031] On the other hand, when compressed data is settled in page memory in step S22, it is checked whether it is a data end (step S23), if it is a data end, data will be elongated for every predetermined line and printing will be performed (step S24).

[0032] Moreover, if it is not a data end in step S23, the image data of return and a predetermined line is compressed into step S21, and it stores in page memory.

[0033]

[Effect of the Invention] As explained in full detail above, the printer equipment concerning claim 1 of this invention It has page memory, a printer controller, and printer engine. A printer controller The image data by which it was divided for every predetermined line sent from the host machine which outputs the image data based on a former image is compressed by the predetermined compression method. The compressed data are stored in page memory, and the data compressed into the printer engine which performs printing further are elongated and sent out. A printer controller There is much amount of data which compressed image data for every predetermined line, and carried out sequential storing at page memory, and was compressed at the time of storing in page memory, and in not fitting in page memory, it considers as the configuration which divides a former image into two or more parts small, and carries out a printout to them.

[0034] Therefore, the effectiveness that the printout of the image quality of choice can be automatically obtained with the printing instruction of a user's once is done so, without applying the time and effort of excessive actuation to a user by dividing two or more former images small automatically, and outputting them, even if it is the case where the compressed image data is not settled in the memory in a controller.

[0035] In a configuration according to claim 1, as for the printer equipment concerning claim 2 of this invention, a printer controller fills page memory with compressed data. With the configuration which makes 1 page compressed data settled in this page memory, and carries out a printout, since it is a thing smoothly The compressed image data When not fitting in page memory, the effectiveness that time amount until it divides and outputs to two or more pages can be shortened is done so by outputting the data of a part already settled in page memory.

[0036] The printer equipment concerning claim 3 of this invention is set in a configuration according to claim 2. Since [re-] it transmits, and it considers as the configuration which starts a transfer from the head of a part in which it did not fit by the last transfer in case it outputs, a former image When the compressed image data is not settled in page memory, useless data transfer can be excluded by requiring a re-transfer for the image data left without being settled at the starting point, and, therefore, the transfer time can be shortened.

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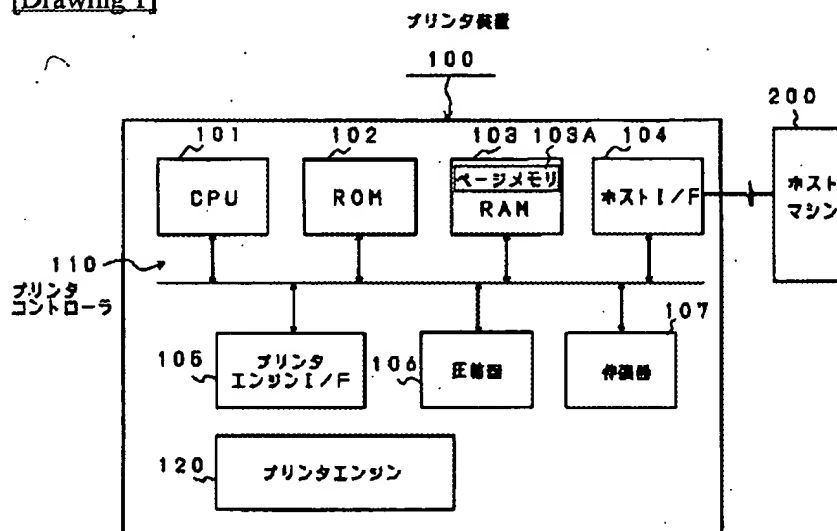
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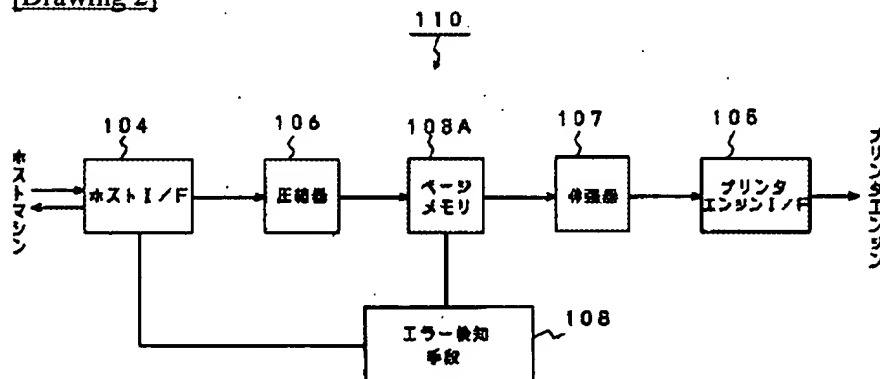
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DRAWINGS

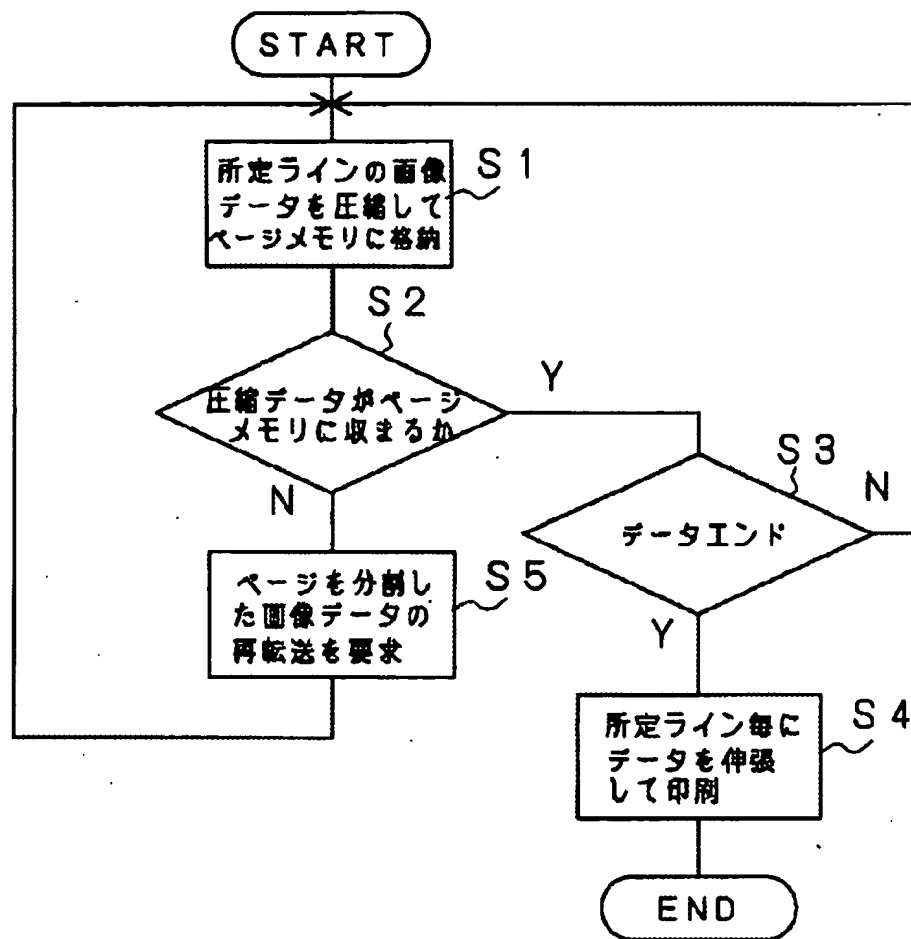
[Drawing 1]



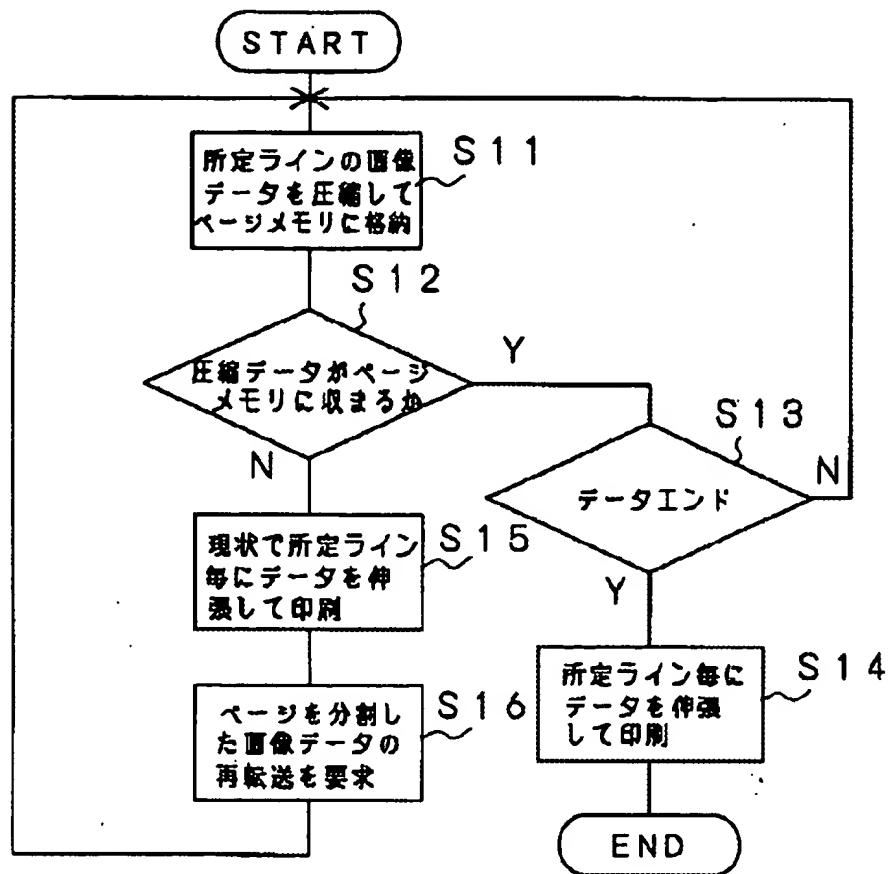
[Drawing 2]



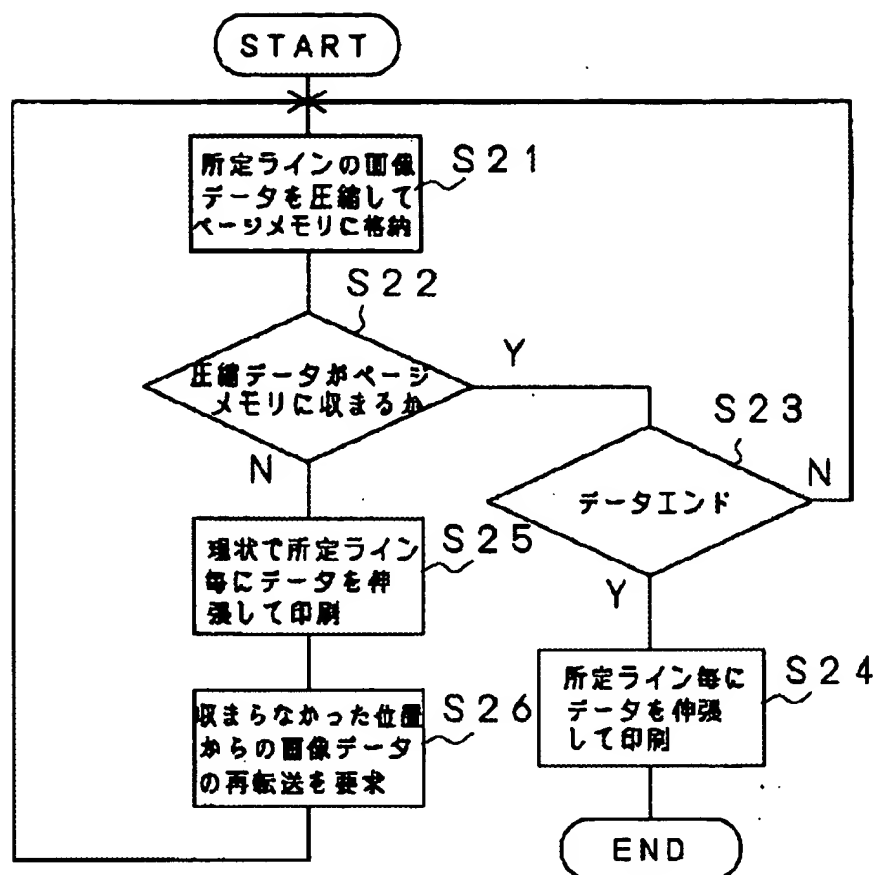
[Drawing 3]



[Drawing 4]



[Drawing 5]



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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block block diagram of 1 operation gestalt of the printer equipment concerning this invention.

[Drawing 2] It is the block block diagram of the printer controller shown in drawing 1.

[Drawing 3] It is the operation flow chart of 1 operation gestalt of the printer equipment concerning this invention.

[Drawing 4] It is the operation flow chart of other operation gestalten of the printer equipment concerning this invention.

[Drawing 5] It is the operation flow chart of still more nearly another operation gestalt of the printer equipment concerning this invention.

[Description of Notations]

100 Printer Equipment Concerning this Invention

101 CPU

102 ROM

103 RAM

103A Page memory

104 Host IF

105 Printer Engine IF

106 Compressor

107 Stretcher

110 Printer Controller

120 Printer Engine

200 Host Machine

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